COVID-19 impact on medical education and the future post-pandemic era for medical students

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Discussion article

COVID-19 impact on medical education and the future post-pandemic era for medical students

DISCUSSION

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ABSTRACT

The COVID-19 global emergency has brought about unexpected changes in the format and quality of undergraduate medical education in a short period of time. The impact of remote delivery on medical students learning, satisfaction, confidence, social relationships, communications and emotional wellbeing has been significant. The lack of direct patient and teacher contact is generating anxiety about their future competence. The ambivalence about the urge to help without sufficient clinical skills and the fear of being either infected or becoming an asymptomatic carrier that puts patient safety at risk is of concern to them.

We offer suggestions for enhancing pandemic or global emergency preparedness for the future. Strategies to manage the way in which remote learning is delivered need to be implemented as a matter of urgency if social distancing and quarantine regulations keep medical students away from hands-on clinical practice for long periods. Actions to maintain motivation and trust in the medical schools to meet their learning needs now and in the future are warranted.

Keywords: pandemics, medical students, COVID-19, medical education, remote delivery

INTRODUCTION

The world as we know it has forever changed with the devastating physical, psychosocial and economic impact of Coronavirus 2019 (COVID-19). Medical students and trainee doctors are experiencing a clinical and educational challenge of massive proportions their predecessors have not seen. Many tutorials, grand rounds and health service activities have either scaled down or ceased to allow personnel and scarce resources to be redirected to respond to the epidemic. The impact for patients within the hospital system are widespread with conditions going untreated, elective surgeries delayed, treatments for chronic disease interrupted, and inadequate ambulatory management of conditions due to hospital avoidance, mental illness exacerbation, deterioration of quality of life, and ultimately an excess all-cause mortality. (1) The forced transition to remote learning for an undetermined length of time has brought about anxiety, depression, and fear of future incompetence for medical students. This body of work summarises and builds on the views of a selection of Australian medical students from four different universities in three States (SR, MK, AD, and DB) who have been directly impacted by the COVID-19 pandemic.

HOW HAS SOCIAL DISTANCING IMPACTED ON TRAINING QUALITY?

The COVID-19 pandemic has changed the future landscape of medical education, revealing the need to address challenges that ensure a safe and effective learning environment for students. They report that the shift towards remote online delivery for graduate doctors such as residents has undergone rapid adaptation thanks to expert input and collaborative efforts to integrate re-structuring of existing resources innovatively. (2) By contrast, for undergraduate cohorts of students the quality of education has suffered in the few weeks since the social distancing measures were implemented.

For students in their early years, the sporadic opportunities to examine patients, practice in laboratories, attend the morgue, analyse blood samples, and develop communication skills are being replaced with non-interactive videos, passive power point files, and pre-recorded lectures with no opportunity for live questions and answers. While the importance of independent learning is understood, students find it difficult to stay motivated and have a sense of abandonment and exclusion from hands-on practice. In this very early stage of the transition period medical school, academics have been working endlessly to bridge the gap and produce some valuable new resources.

For medical students in intermediate years, life has changed more dramatically. In recent months they faced a robust number of ward inpatients across specialties and crowded outpatient clinics. Now, they are either forced to stay at home for their own protection, or to wait in very quiet rooms as many appointments have migrated to telehealth services; even for patients with multiple comorbidities, many have cancelled for fear of contracting the virus. Telehealth is becoming ever more important in the delivery of care in an emergency setting (3) as it does not pose additional risks for the patient, healthcare workers or students. However, the uptake of telehealth introduces new challenges for medical education as it restricts the development of skills formed through personal contact, including proficiency in patient communication and physical examination.

For students in their final years, clinical placements comprise the majority of teaching. Therefore, withholding access to the healthcare system may result in a shortage of competent medical graduates for internships in 2021 and 2022. It is for this reason that some universities are bringing final and pre-final year medical students back into the clinical environment. While this is mostly seen as a positive initiative, students hope that the time off clinical placements allowed medical schools to develop a safer system for both patients and students. Some students were relieved when placements were suspended, with all teaching being delivered through online platforms, as they feared being asymptomatic carriers that could unintentionally infect vulnerable patients. This was primarily as wider population screening was not in place to detect mild or asymptomatic cases and students perceived social distancing was not implemented early enough. With the implementation of a more extensive testing regime for healthcare workers, which includes medical students, early identification might improve.

AMBIVALENCE ABOUT PERSONAL SAFETY AND MISSING OUT ON DEVELOPING SKILLS

A terrifying reflection for medical students is the increasing number of cases among healthcare workers due to the lack of adequate personal protection. This can be seen in Italy, where healthcare workers comprise of 9% of total cases. (4) Being a medical student in the current climate resembles a limbo where they feel they have some skills to contribute but lack the length of clinical experience that is required for safe medical practice in an overwhelmed healthcare system. Medical students, on the one hand, are eager to gain as much clinical exposure and contribute to alleviate workforce shortages; on the other, they fear for their safety in a high-risk area with inadequate protective equipment and for their patients' safety if they become asymptomatic vectors. Feeling the need to protect themselves in a widespread pandemic puts a break on medical students when deciding to play a role in the front lines.for a period of two years during which the IAAF was expected to provide written evidence to support them, leaving Chand free to resume competing. "I am who I am" she stated at the time. (6,7)

HOW SOON SHOULD MEDICAL STUDENTS RETURN TO FACE-TO-FACE TRAINING?

In areas where the pandemic has not overwhelmed the health system it might be safe for students in final and pre-final clinical years to be encouraged to complete face-to-face training required for intern-level work, while there are still doctors to supervise and guide them. However, while final year students are closer to gradu-

ating and equipped with the skills required to actively participate in the hospital, pre-final year medical students are hesitant to return to clinical placements as they also do not want to be an added burden for healthcare professionals.

Although, as there is no timeframe for an end to the pandemic, the decision as to when pre-final year medical students should go back is a difficult one. Much of the available data is derived from modelling studies, hence there is still variation and uncertainty in the validity of estimates of transmissibility, duration of pre-symptomatic periods and effectiveness of social distancing strategies. (5)

In line with the position of medical schools, students agree they should not be at the forefront dealing with COVID-19 cases. On the flip side, however, up-skilling them now in the management of non-COVID19 patients may enable them to make a positive contribution to the healthcare system if hospitals get overloaded and to put less pressure on the post-COVID19 healthcare system. Therefore, as the curve starts to flatten it may be a good time to return and upskill pre-final year medical students. If cases rise then placements may again have to go on hold.

PREPAREDNESS FOR OVERWHELMED HEALTH SYSTEMS

Medical students' views on the health system's preparedness to meet demand started to change since witnessing progressive collapse of healthcare systems in other developed countries in Europe, Asia and America. The expectation that hospitals would be fully equipped to handle any medical emergencies that might arise, has been shattered by the scale of the disaster and the uncertainty of this occurring again in the future once they enter the medical workforce. Students are already detecting early signs of resource shortages of basic items such as personal protective equipment (PPE) and hand sanitiser, signalling an already stretched healthcare system even before the pandemic peak is reached. Worse, they have witnessed patients taking PPE to stockpile at home. Students are also concerned about the exacerbation of existing problems, that relate to budget and staff shortages, such as the lengthening of waitlists for elective surgeries, procedures such as screening colonoscopy following a positive FOBT result, or suspension of chemotherapy sessions for patients who may be at greater risk of infection by presenting at hospital.

POSSIBLE NEED FOR RATIONING OF CRITICAL HEALTHCARE IN CATASTROPHIC EMERGENCIES

As grim as it looks, this hyperawareness of mortality risk at any age —not just the elderly and immunosuppressed— and the reality of a sudden and unanticipated shortage of ICU beds and essential consumables in developed nations presents an opportunity to rethink the way in which we operate in health services. Many groups of scientists, health professionals, government officials, and health economists have gathered to model disease trajectories and economic predictions to come to a good compromise strategy (6) that prevents cases, saves more lives and diminishes an inevitable economic recession. Unfortunately not all are working at the same pace, (7) and some stretched health systems will not have the capacity to offer the same level of resources to guarantee equitable human survival, so hard decisions will have to be made. (8)

The logical approach as perceived by medical students, in the event of an extreme shortage of resources, is to prioritise patients with the highest chances of immediate and long-term survival (if feasible to identify them). In terms of pandemic triage, students support a variety of views. Some have inclination for those with lower level of co-morbidities, individuals with anticipated better quality of life post-disease, and those who would have greater potential to benefit society, such as medical staff, (9) who if allowed to recover would then be able to help others in turn. Others support giving preferential treatment to those who are significantly ill or vulnerable, (6) and others believe that younger patients and those with fewer risks of complication should be given priority. (10)

Students find it morally distressing to think that one day it may be their responsibility to decide who gets access to critical healthcare and who will likely die without it, as a result of some public health emergency-related hospital policy that overrides their clinical judgment. After all, they all went into medicine to help people and save lives, not to use artificial intelligence-derived prognostic algorithms or play God and let people die.

They are aware that vulnerable groups including indigenous people may be at risk of missing out on access if, as in previous pandemics, the rules are based on utility and efficiency (11) rather than on severity levels. Indigenous people are also disadvantaged by the following: the scarcity of culturally sensitive healthcare services, remote location, language barriers, reluctance to utilise available medical resources and services, high prevalence of asthma and chronic obstructive pulmonary disease, (12) and the range of unaddressed social determinants of poor health. (13) This would render them less likely to benefit from critical care or less likely to recover. Effective healthcare that reflects the values and priorities of socially disadvantaged groups requires a focus on community autonomy, cultural sensitivity, local communication and social support, much of which may not be feasible to incorporate in a pandemic situation.

EMOTIONAL IMPACT OF UNCERTAINTY OF PANDEMIC DURATION

The fact that vaccine development takes over a year, and that re-infection is a possibility, as limited evidence suggests not all people will mount a long-lasting immunological response, creates significant anxiety. There is the added concern that no known cure but only symptomatic and supportive treatments exist, and many tested and untested therapies are being tried, from anti-malarial drugs to Chinese medicines and vitamin supplements. This weighs on the minds of students with respect to uncertainty about the length of the pandemic and associated social distancing and exposure to risk when clinical practice returns.

Early year students feel that being isolated from campus and hospital environments for extended periods of time is also detrimental to the mental health of the entire cohort, given that part of what makes university enjoyable is the immersive social experience. Attending classes in person and seeing peers are strong motivators for regular study, and having a regular routine makes life feel more stable and controllable. As first year students, losing face-to-face contact with their new friends after a few weeks of classes is gloomy even though virtual contact is still feasible. The dynamics of study in groups is also transforming for an indefinite length of time and for those who thrive on collaborative efforts, being home alone makes the university term feel optional, unmotivating and stressful.

Social media partly helps to reduce levels of anxiety and depression associated with both getting ill and academic anxieties. But it is clear that providing and receiving emotional support over text, especially when busy self-learning schedules delay opportunities to send or receive a reply, are triggering a sense of abandonment. If the pandemic prolongs, there is growing uncertainty for the future of medical education, in particular for ensuring both a safe learning environment and adequate progression. (14)

For all, the restricted access to facilities, academic staff and peers will lead to decreased confidence in their clinical skills and deteriorating mental health, which have both been associated with an increase in clinical error rates in graduates. (15)

HOPES AND STRATEGIES FOR THE FUTURE NORMAL

In the midst of this human catastrophe many positive activities are emerging that give medical students hope for a future where they can be equipped to deal with global threats: (16)

- Ongoing dissemination of research as it happens (pre-prints)
- Ethics committees and Journals prioritizing COVID-19 research from epidemiology to trials and vaccine development
- Living systematic reviews of evidence
- Living guidelines for pandemic preparedness and control from clinical experts
- Positive attitude encouraged on television and social media

In the immediate future, misconceptions about the sources of infection, mode of transmission and potential cures for COVID-19 disseminated through social media will need to be debunked through public education. Medical students can add to the expert advice by updating themselves with news concerning the virus, understanding its pathophysiology and participating in this social duty of widely promoting the facts. These simple measures are important contributions. For the longer-term plan, several options exist for positive change in preparation for a future global emergency situation and for improvements in training approaches after the current pandemic subsides (Table 1).

A) Strategies to prepare medical students for a future global emergency
In preparation for *the new normal* the medical curriculum could be revised to devote more sessions to enhance practical skills in:
- Rapid assessments of public health threats
- Rapid emergency response beyond the one-on-one health care
- Health service transformation to creatively increase capacity
- Interdisciplinary team work
- Research design and evaluation of impact of interventions
- Communication of bad news and impending end-of-life
- Shared decision-making
- Telehealth and web-based practice as alternatives that can be used as demand increases
- Grief support for survivor relatives

B) Strategies for the current change in training approaches
To tackle the current aspects of lower training quality, students want:
- Formal peer support to protect mental health of health professionals
- Opportunity for curriculum co-design for more satisfactory alternative delivery methods
  Such as a pandemic training package that can be launched at early stages in a future public health emergency to prevent student isolation and disadvantage
- Provision of protective equipment to return to clinical training in a safe environment
- Refine skills to help manage non-COVID-19 patients during the recovery period
- Implementation of intensive practical skill sessions when normal classes resume

Table 1
Strategies for emergency preparedness and post-pandemic training

CONCLUSION

For medical students, the experience of the COVID-19 pandemic to date has been both eye-opening and overwhelming. It is true their education has been temporality compromised, however it is hoped the lessons learned during the pandemic will have positive impacts for their future professional careers. Resources for remote delivery are anticipated to be refined to meet student need. While it remains uncertain when and how this pandemic will end, with some medical students currently in voluntary or enforced confinement, they are still able to take a positive attitude and think of ways in which they can contribute to refine the medical curriculum to better equip us for a future health or environmental catastrophe. They can use their skills in web design, programming, accountancy, dietetics, counselling or art to co-design a future healthcare system that can assist the response to the unintended and unpredictable consequences of new pandemics, evolution and environmental degradation. They can adopt a positive attitude to be prepared rather than despair.

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